

IN THE CLAIMS:

1. (Currently Amended) A method for performing layer 2 authentication of a Mobile Node supporting Mobile IP in an SSG-based network, comprising:

obtaining layer 2 information including at least one of a MAC address or a username associated with the Mobile Node;

performing layer 2 authentication of the Mobile Node or receiving a packet indicating that layer 2 authentication of the Mobile Node has been performed;

generating an orphaned host object including the layer 2 information, wherein the orphaned host object is generated after layer 2 authentication of the Mobile Node has been performed;

unorphaning the orphaned host object by a network device in the SSG-based network when an IP address associated with the layer 2 information is received such that the unorphaned host object includes the IP address and the layer 2 information, wherein the IP address associated with the layer 2 information is received without performing layer 3 authentication of the Mobile Node, thereby enabling layer 3 policies to be enforced without performing layer 3 authentication of the Mobile Node; and

providing access to services based upon the IP address of the unorphaned host object.

2. (Original) The method as recited in claim 1, further comprising:

obtaining a username associated with the Mobile Node;

wherein the orphaned host object includes the username associated with the Mobile Node.

3. (Original) The method as recited in claim 1, wherein obtaining layer 2 information comprises:
- receiving the layer 2 information in an access request packet;
 - wherein generating the orphaned host object is performed when an access accept packet is received indicating the Mobile Node associated with the layer 2 information has been authenticated by a AAA server.
4. (Original) The method as recited in claim 1, wherein unorphanning the orphaned host object comprises:
- receiving a packet including the IP address and the layer 2 information; and
 - updating the orphaned host object to include the IP address, thereby generating an unorphanned host object.
5. (Original) The method as recited in claim 4, wherein receiving a packet including the IP address and the layer 2 information comprises:
- receiving an ACCT start packet including the IP address and the layer 2 information.
6. (Original) The method as recited in claim 5, further comprising:
- receiving an ACCT stop packet including the IP address; and
 - deleting the unorphanned host object when the ACCT stop packet is received.
7. (Original) The method as recited in claim 1, further comprising:
- deleting the unorphanned host object.
8. (Original) The method as recited in claim 7, further comprising:

receiving an ACCT stop packet including the IP address;
wherein deleting the orphaned host object is performed when the ACCT stop packet is received.

9. (Original) The method as recited in claim 4, wherein the packet including the IP address and layer 2 information further includes an IP address of a network device from which the packet was received, the method further comprising:

maintaining a mapping between the IP address of the network device and the IP address of the Mobile Node such that a mapping of one or more Mobile Nodes supported by the network device is maintained.

10. (Original) The method as recited in claim 9, wherein the packet including the IP address and the layer 2 information is an ACCT start packet.

11. (Original) The method as recited in claim 9, further comprising:

receiving a packet including the IP address of the network device that indicates that the network device is not functioning; and

deleting an orphaned host object or orphaning a host object for each of the Mobile Nodes supported by the network device.

12. (Original) The method as recited in claim 11, wherein the packet including the IP address of the network device that indicates that the network device is not functioning is an ACCT-OFF packet.

13. (Original) The method as recited in claim 11, wherein the packet including the IP

address of the network device that indicates that the network device is not functioning is an ACCT-ON packet.

14. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for performing layer 2 authentication of a Mobile Node supporting Mobile IP in an SSG-based network, comprising:

instructions for obtaining layer 2 information including at least one of a MAC address or a username associated with the Mobile Node;

instructions for generating an orphaned host object including the layer 2 information, wherein the orphaned host object is generated when layer 2 authentication of the Mobile Node has been successfully performed; and

instructions for unorphanning the orphaned host object when an IP address associated with the layer 2 information is received such that the unorphanned host object includes the IP address and the layer 2 information, wherein the IP address associated with the layer 2 information is received without performing layer 3 authentication of the Mobile Node, thereby enabling layer 3 policies to be enforced without performing layer 3 authentication of the Mobile Node, wherein unorphanning the orphaned host object is performed without receiving information from a user via the SSG-based network.

15. (Currently Amended) An apparatus for performing layer 2 authentication of a Mobile Node supporting Mobile IP in an SSG-based network, comprising:

means for obtaining layer 2 information including at least one of a MAC address or a username associated with the Mobile Node;

means for performing layer 2 authentication of the Mobile Node using at least a portion of the layer 2 information or receiving a packet indicating that layer 2 authentication

of the Mobile Node has been performed;

means for generating an orphaned host object including the layer 2 information,
wherein the orphaned host object is generated when layer 2 authentication of the Mobile
Node has been performed; and

means for unorphanning the orphaned host object when an IP address associated with
the layer 2 information is received such that the unorphanned host object includes the IP
address and the layer 2 information, wherein the IP address associated with the layer 2
information is received without performing layer 3 authentication of the Mobile Node,
thereby enabling layer 3 policies to be enforced without performing layer 3 authentication of
the Mobile Node, wherein unorphanning the orphaned host object is performed without
receiving login information from a user via the SSG-based network.

16. (Currently Amended) An apparatus for performing layer 2 authentication of a Mobile
Node supporting Mobile IP in an SSG-based network, comprising:

a processor; and

a memory, at least one of the processor or the memory being adapted for:

obtaining layer 2 information including at least one of a MAC address or a username
associated with the Mobile Node;

performing layer 2 authentication of the Mobile Node using at least a portion of the
layer 2 information or receiving a packet indicating that layer 2 authentication of the Mobile
Node has been performed;

generating an orphaned host object including the layer 2 information, wherein the
orphaned host object is generated when layer 2 authentication of the Mobile Node has been
performed; and

unorphanning the orphaned host object when an IP address associated with the layer 2

information is received such that the unorphaned host object includes the IP address and the layer 2 information, wherein the IP address associated with the layer 2 information is received without performing layer 3 authentication of the Mobile Node, thereby enabling layer 3 policies to be enforced without performing layer 3 authentication of the Mobile Node, wherein unorphaning the orphaned host object is performed without receiving login information from a user via the SSG-based network.

17. (Previously Presented) The apparatus as recited in claim 16, at least one of the processor or the memory being further adapted for:

enforcing layer 3 policies based upon the layer 2 authentication of the Mobile Node.

18. (Previously Presented) The apparatus as recited in claim 16, at least one of the processor or the memory being further adapted for:

enforcing layer 3 policies without performing layer 3 authentication.

19. (Previously Presented) The apparatus as recited in claim 16, at least one of the processor or the memory being further adapted for:

enforcing layer 3 policies by accessing the unorphaned host object.

20. (Previously Presented) The apparatus as recited in claim 16, at least one of the processor or the memory being further adapted for:

enforcing layer 3 policies based upon the IP address of the unorphaned host object.

21. (Cancelled)

22. (Currently Amended) The method as recited in claim 1, ~~further comprising:~~
wherein performing Layer 2 authentication of the Mobile Node is performed using an EAP-SIM protocol.

23. (Currently Amended) The method as recited in claim 1, ~~further comprising:~~
~~authenticating~~ wherein layer 2 authentication of the Mobile Node is performed using a
LEAP protocol using the layer 2 information;
~~— wherein generating an orphaned host object including the layer 2 information is~~
~~performed after the Mobile Node has been authenticated using the layer 2 information.~~

24. (Currently Amended) The ~~apparatus method~~ as recited in claim ~~16~~ 23, wherein
~~authenticating~~ layer 2 authentication of the Mobile Node is performed using an EAP-SIM
protocol.